



## MATERIAL SAFETY DATA SHEET

This MSDS is for 85-98 Formic Acid. Some of the values for 65% Formic Acid are different. However, for practical purposes the material safety aspects are the same.

<b>Product</b>		<b>Formic Acid LA2163</b>	
Product Identification No.		LA2163	
WHMIS Codes		Class B-3 Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F) Class E Corrosive liquid	
Product Name		Formic Acid 85%	
DSL		On the DSL list	
Synonym(s)		Methanoic acid	
CAS #		Mixture	
<b>Composition and Information on Ingredients</b>			
Name	CAS#	% by Weight	
Formic acid	000064186	85-98	Oral (LD50) Acute: 1076 mg/kg (Mouse) 1830 mg/kg (Rat) 4000 mg/kg (Dog)
Water	7732-18-5	3-15	Oral (LD50) Acute: 99999 mg/kg (Rat) Chronic: 99999 mg/kg (Rat) Dermal (LD50) Acute: 9999 mg/kg (Rat) Chronic: 9999 mg/kg (Rat)
<b>Hazards Identification</b>			
Potential Acute Health Effects		Very hazardous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion, and of inhalation. Eye contact may produce burns – irreversible damage. The vapors are a severe eye irritant. May cause burns and irritation to mouth, throat and stomach if ingested. Severely irritating to nasal passages, throat and lungs. Can cause pulmonary edema; signs and symptoms can be delayed for several hours.	
Potential Chronic Health Effects		Carcinogenic effects: not available Mutagenic effects: not available Teratogenic effects: not available Developmental Toxicity: not available Repeated or prolonged contact with spray mist	

	<p>may produce chronic eye irritation and severe skin irritation.</p> <p>Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.</p> <p>Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Repeated or prolonged exposure to the substance can produce liver damage or kidney damage.</p>
<b>First Aid Measures</b>	
Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin Contact	In case of contact immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Hazardous Skin Contact	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, administer oxygen. Get medical attention immediately.
Hazardous Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. <b>Warning:</b> It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.
Ingestion	<b>Do not</b> induce vomiting. Never give anything by mouth to an unconscious person. Have conscious person drink several glasses of water or milk. Seek medical attention immediately.
Hazardous Ingestion	Not available

<b>Fire and Explosion Data</b>	
Product	Is combustible
Auto-Ignition Temperature	480.4°C (896°F)
Flash Points	Closed cup: 51.1°C (124°F) (Setaflash)
Flammable Limits	Lower: 12% / Upper: 38%
Products of Combustion	These products are carbon oxides (CO, CO <sub>2</sub> )
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames and sparks, of heat.
Explosion Hazards in Presence of Various substances	Risks of explosion of the product in presence of mechanical impact: Not available Risks of explosion of the product in presence of static discharge: Not available
Fire Fighting Media and Instructions	Small Fire: Use <b>dry</b> chemical powder Large Fire: Us <b>dry</b> chemicals, CO <sub>2</sub> , alcohol, foam water spray
Special Remarks on Fire Hazards	Not available
Special Remarks on Explosion Hazards	Not available
<b>Accidental Release Measures</b>	
Small Spill	Absorb with an inert material and place in an appropriate waste disposal container.
Large Spills	Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with <b>dry</b> earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDDS and with local authorities.
<b>Handling and Storage</b>	
Precautions	Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. <b>Do not</b> ingest. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such

	as oxidizing agents, alkalis. Decomposition produces carbon monoxide. The rate of decomposition is affected by time and heat. Decomposition significantly increases above 38°C (100°F). Pressure can build in containers due to formation of carbon monoxide formation. Always open containers slowly to allow excessive pressure to vent. A person wearing the appropriate protective equipment should do this in a well-ventilated area.
Storage	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).
<b>Exposure Controls and Personal Protection</b>	
Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the workstation location.
Personal Protection	Splash goggles. Neoprene or rubber gloves. Wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear. Boots.
Personal Protection in Case of a Large Spill	Splash goggles. Neoprene or rubber gloves. Wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear. Boots.
Exposure Limits	TWA 5 STEL 10 (ppm) from ACGIH (TLV) US TWA 9 STEL 19 (mg/m <sup>3</sup> ) from ACGIH (TLV) US TWA 5 (ppm) from OSHA (PEL) US Contact local authorities for acceptable exposure limits
<b>Physical and Chemical Properties</b>	
Physical State of appearance	Liquid
Odor	Pungent
Molecular Weight	46
Taste	Not available
pH (1% soln/water)	1.9 (Acidic)
Colour	Colourless to light yellow

Boiling Point	101.7°C – 106.2°C (215°F – 223°F)
Melting Point	-13.9°C - +3.9°C (7°F - 39°F)
Critical Temperature	Not available
Specific Gravity	1.194 - 1.216 (water = 1)
Vapor Pressure	The highest known value is 34.4 mm of Hg (@ 20°C) (Formic Acid)
Vapor Density	The highest known value is 1.6 (Air = 1) (Formic Acid)
Volatility	Not available
Odor Threshold	5 ppm
Evaporation rate	Not available
Viscosity	Not available
Water/Oil Dist. Coeff.	Not available
Ionicity (in water)	Not available
Dispersion Properties	See solubility in water
<b>Stability and Reactivity</b>	
Stability	This product is stable
Instability Temperature	Not available
Conditions of Instability	Avoid temperatures above 38°C (100°F); contaminated storage vessels and tanks. Formic acid decomposes to carbon monoxide and may cause pressure build-up in closed containers.
Incompatibility with Various Substances	Reactive with oxidizing agents, reducing agents, alkalis or chromium trioxide.
Corrosivity	Not available
Special Remarks on Reactivity	Avoid contaminants such as rust and other corrosion products; dehydrating agents, such as concentrated sulfuric acid, bauxite or silica gel.
Special Remarks on Corrosivity	Not available
Hazardous Polymerization	Will not occur
<b>Toxicological Information</b>	
Routes	Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50); 1210 mg/kg (Rat)
Chronic Effects on Humans	Carcinogenic Effects; not available Mutagenic Effects: Not available Teratogenic Effects: Not available Developmental Toxicity: Not available Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe

	<p>skin irritation.</p> <p>Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.</p> <p>Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Repeated or prolonged exposure to the substance can produce liver damage or kidney damage.</p>
Other Toxic Effects on Humans	<p>Very hazardous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion, of inhalation. Skin contact may produce burns. Eye contact may produce burns – irreversible damage. The vapors are a severe eye irritant. May cause burns and irritation to mouth, throat and stomach if ingested. Severely irritating to nasal passages, throat and lungs. Can cause pulmonary edema; signs and symptoms can be delayed for several hours.</p>
Special Remarks on Toxicity to Animals	Not available
Special Remarks on Chronic Effects on Humans	Not available
Special Remarks on Other Toxic Effects on Humans	Not available
<b>Ecological Information</b>	
Ecotoxicity	Formic acid exhibits low to slight acute toxicity to aquatic species.
BOD5 and COD	Not available
Products of Biodegradation	Possibly hazardous short-term degradation products are not likely. However, long-term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are less toxic than the product itself.
Special Remarks on the Products of Biodegradation	Not available
<b>Disposal Considerations</b>	
Waste Disposal	Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
<b>Transport Information</b>	

TDG Classification	Class 8: Corrosive liquid
Shipping Name	Formic Acid Solution
UN	UN1779
Packing Group	II
Special Provisions for Transport	No additional remark
<b>Other Regulatory Information</b>	
Other Regulations	OSHA Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)
<b>Other Information</b>	
References	Manufacturer's Material Safety Data Sheet
Other Special Considerations	Not available
Validated by	Maureen Clarkson (VOPAK) on 05/14/2001
Verified by	Maureen Clarkson (VOPAK)
Information contact	Safety, Health and Environment Department Vancouver, BC Tel. 604 273 1441
<b>Notice to Reader</b>	
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**In case of a dangerous goods emergency  
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613 996 6666**

Medivet Pharmaceuticals Ltd., #4, 55 – 9 Avenue SE, High River, Alberta, T1V 1E6

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